

Nail Disorders

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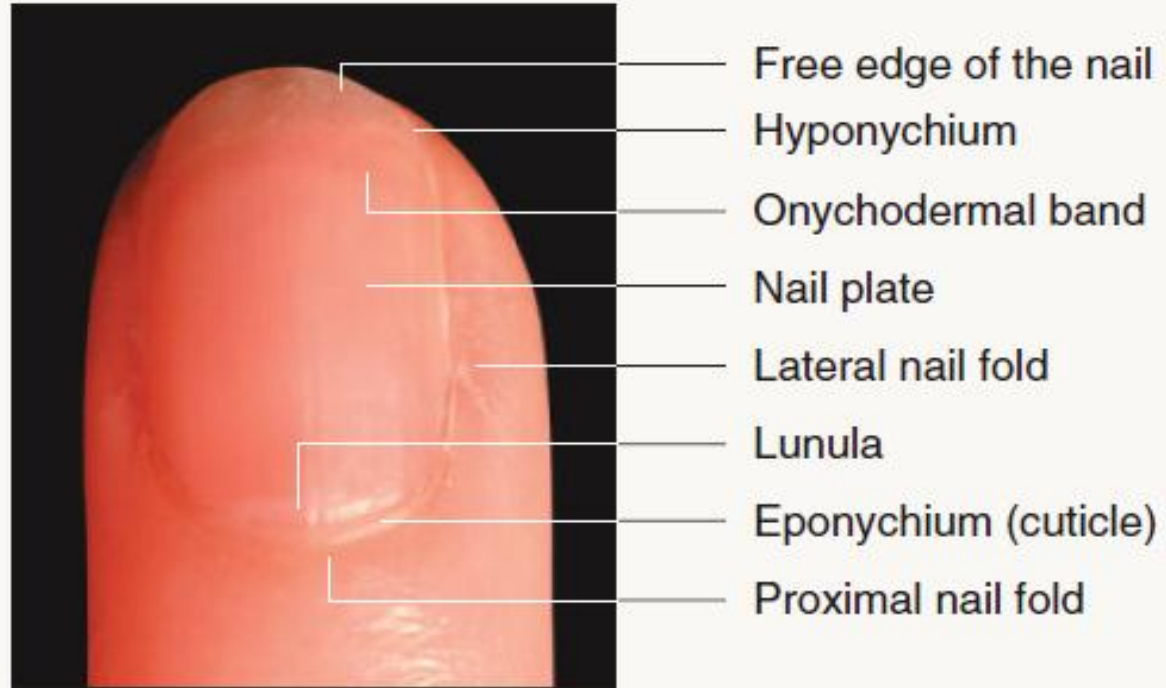


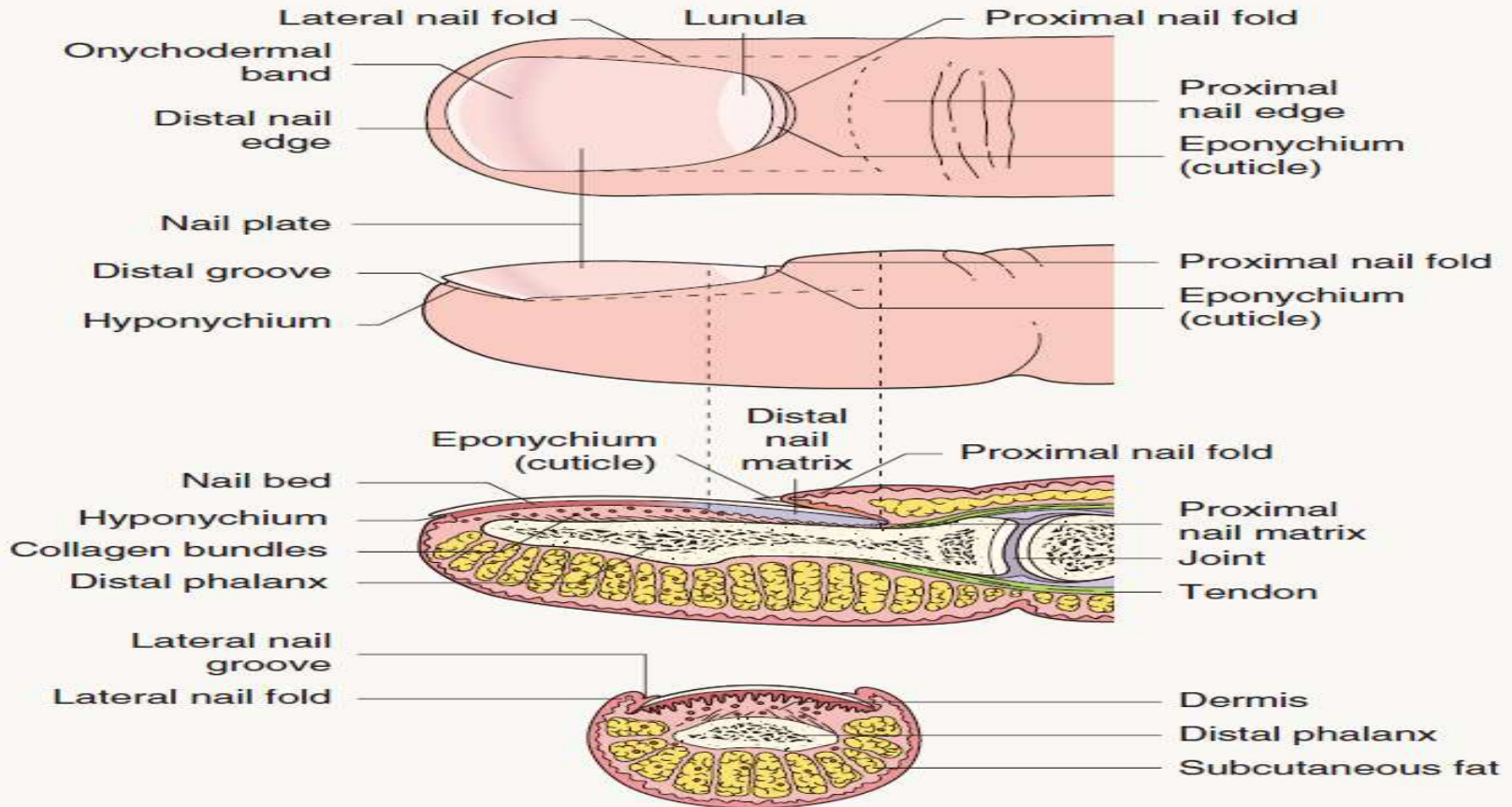
Nail disorders

Learning objectives

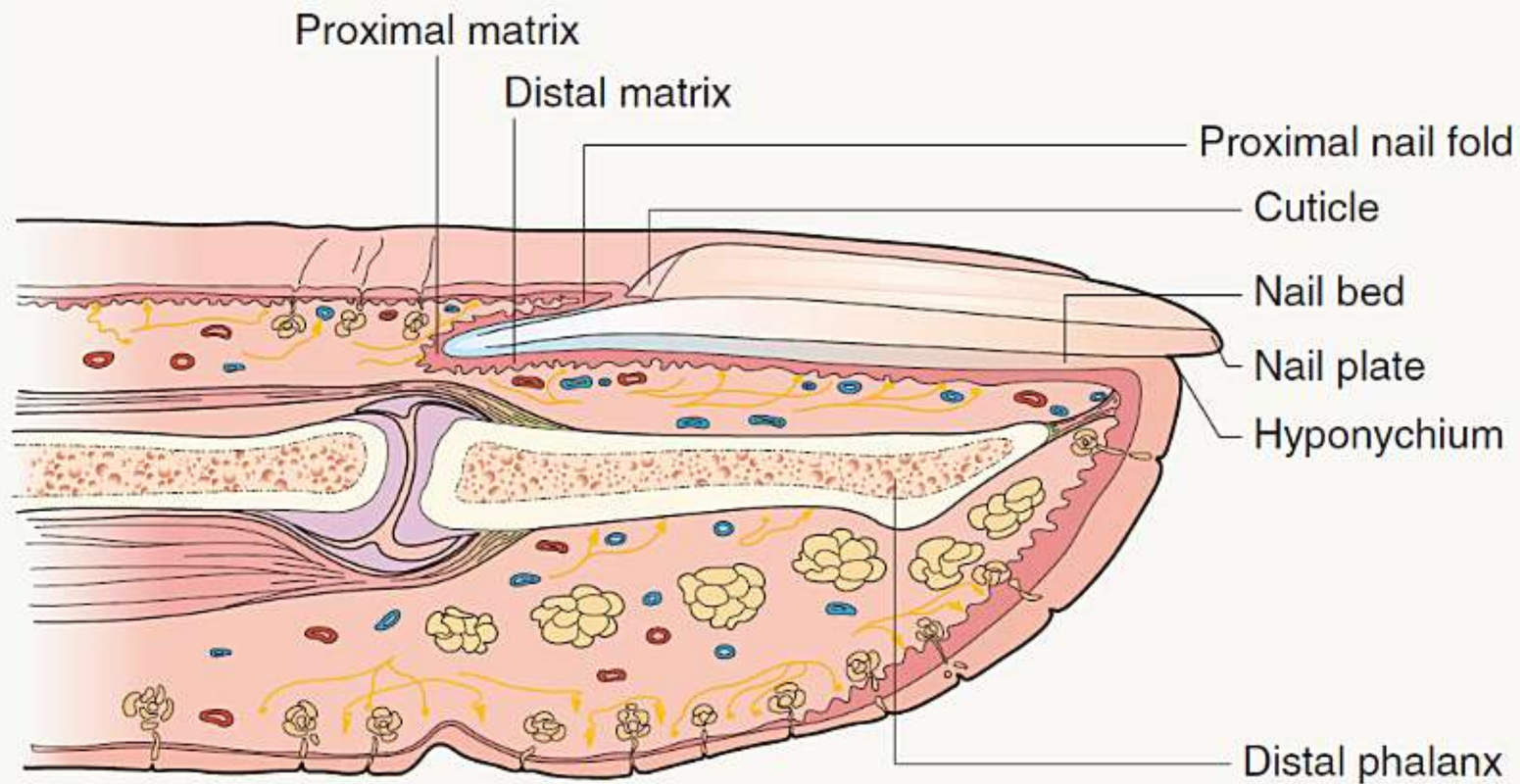
- Understand the anatomy of the nail organ
- Recognize nail changes
- Congenial & Hereditary nail diseases
- The nail in dermatological diseases
- The nail in systemic diseases

NAIL UNIT ANATOMY





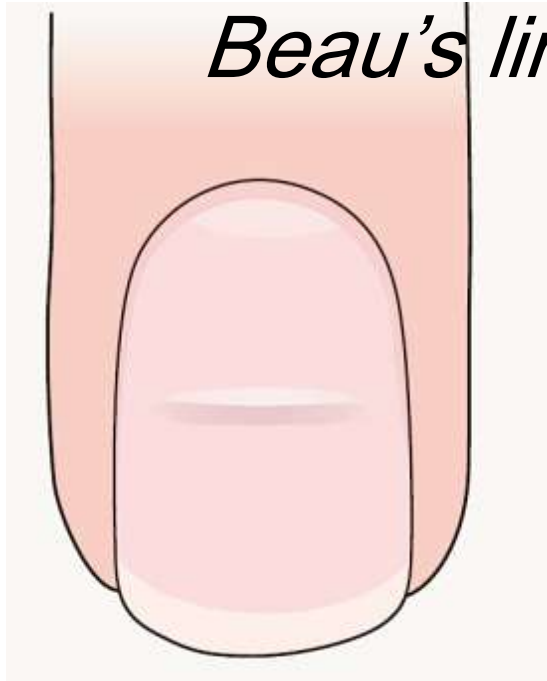
THE NAIL APPARATUS



Nail disorders

Nail Signs Due to Abnormal Nail Matrix Function

Beau's lines



Beau's lines





Beau's lines



DermNetNZ.org



Beau's lines

A Text Atlas of Nail Disorders Techniques in Investigation, Edited Robert Baran et al. third edition

1. Beau's lines

- Transverse, band-like depressions extending from one lateral edge of the nail to the other,
- and affecting all nails at corresponding levels
- Beau's lines are caused by temporary disruption in the growth of proximal nail matrix.

- Most often due to trauma or dermatological disorder (manicures, onychotillomania) or dermatologic disease of the proximal nail fold (e.g. eczema, chronic paronychia).
- Involvement of multiple digits suggests a systemic cause

- The distal limit of the furrow, if abrupt, indicates a sudden attack of disease; if sloping, a more protracted onset.

If the disease can completely inhibit the activity of the matrix for 1–2 weeks or longer, the transverse depression will result in total division of the nail plate, a defect known as ‘onychomadesis’

Table 3.2 Causes of transverse grooves

Common

High fever

Postnatal

Menstrual cycle (multiple grooves), dysmenorrhoea

Measles

Trauma

Chronic paronychia

Local inflammation

Chronic eczema

Uncommon

Kawasaki syndrome

Stevens-Johnson syndrome

Cytotoxic drugs

Acrodermatitis enteropathica and zinc deficiency

Hypoparathyroidism

Syphilis

Mouth, hand and foot disease

Radiation

Carpal tunnel syndrome

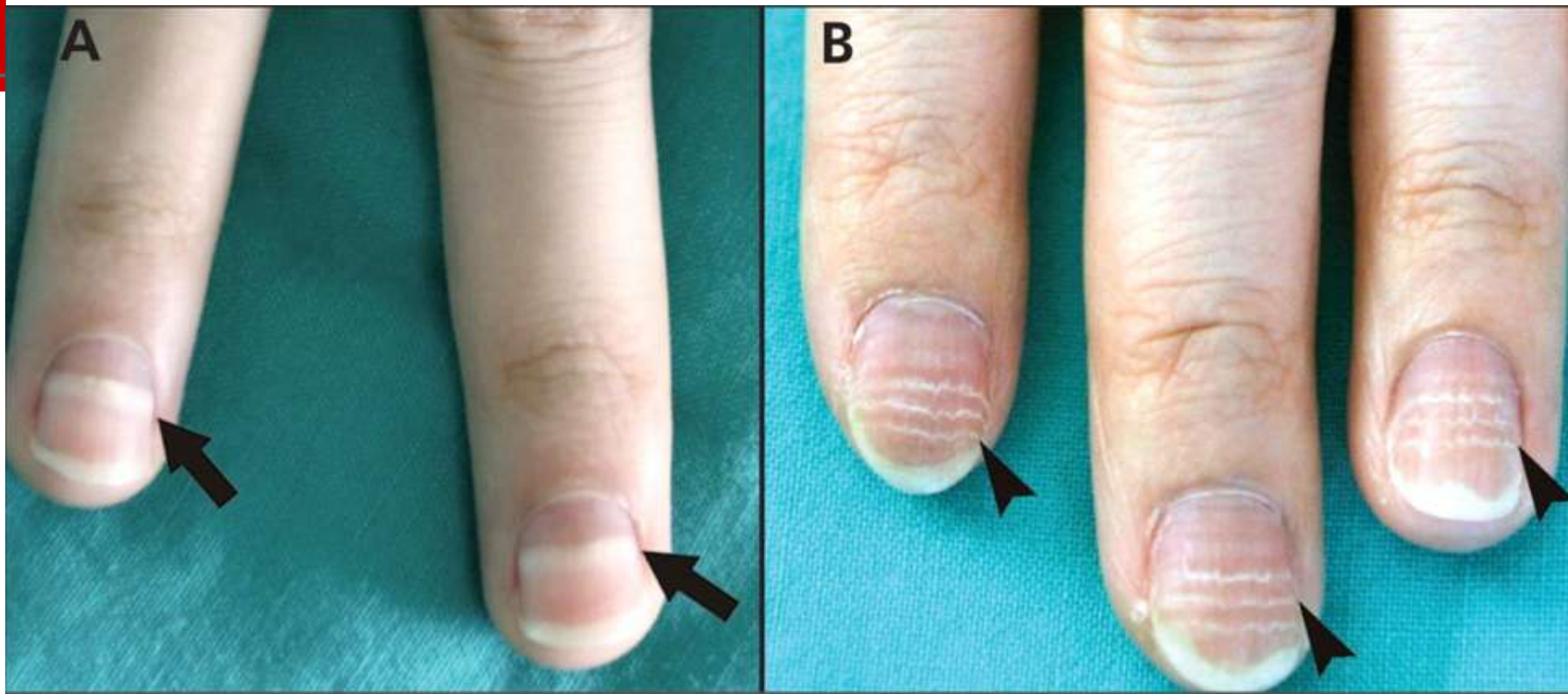
Differential diagnosis

- Mees' lines (true leukonychia)
- Muehrcke's lines (apparent leukonychia)
- melanonychia

Palpable depression and non-blanchability differentiate Beau's lines from Mees' lines, other differential are Muehrcke's lines and melanonychia

A**B**

Transverse lines of the fingernails. (A) Beau's lines (*arrows*) of the thumbnail. (B) Mees' lines (*arrowheads*) of the thumbnail.



(A) Mees lines (arrows) in the fingernails of a 27-year-old woman. (B) Beau lines (arrowheads) in the fingernails of a 41-year-old woman.

Muehrcke lines





Muehrcke lines are paired lines that fade when you press on them. Mees' lines are single lines that won't fade with pressure





melanonychia



Treatment

There isn't a treatment for Beau's lines.
But treating the underlying cause can
keep them from coming back once they
grow out.



Onychomadesis (nail shedding)





Onychomadesis

Onychomadesis
(nail shedding)



Bassi A, Greco A, de Martino M. Arch Dis Child Fetal Neonatal
Ed

2. Onychomadesis (nail shedding)

Proximal detachment of the nail that is most often due to trauma

Similar involvement of multiple digits suggests a systemic cause

Table 4.2 Causes and associations of nail shedding

Local inflammation, e.g. acute paronychia (Figures 4.7–4.12)

Kawasaki's syndrome

Fever or systemic upsets

Syphilis

Bullous dermatoses, e.g. pemphigus

Stevens-Johnson syndrome

Toxic epidermal necrolysis (Lyell's syndrome) (Figures 4.7–4.9)

Drugs

 Cytotoxics

 Antibiotics

 Retinoids

Keratosis punctata

Local trauma

X-irradiation

Acrodermatitis enteropathica

Hypoparathyroidism with amelogenesis imperfecta

Yellow nail syndrome



Pitting

A Text Atlas of Nail Disorders Techniques in Investigation, Edited Robert Baran et al. third edition



Pitting

Moreno-Romero, Juan A., and Ramon Grimalt. "Nail Pitting in Psoriasis." *N Engl J Med* 379.22 (2018): e39.

3. Pitting

Pitting describes the presence of punctate depressions of the nail plate surface that can have an irregular outline



Pits are due to foci of abnormal keratinization of the proximal nail matrix which result in clusters of parakeratotic cells within the dorsal nail plate.





In the proximal plate, these clusters appear as nontransparent collections of scale. Over time, shedding of the parakeratotic cells leads to the appearance of pits. These pits migrate distally with nail growth.



Table 3.3 Causes of pitting

Common

Psoriasis (Figures 3.26, 3.27, 3.29, 3.30)

Alopecia areata (Figure 3.31)

Eczema

Occupational trauma

Parakeratosis pustulosa

Uncommon

Normal

Pityriasis rosea

Secondary syphilis

Table 3.3 Causes of pitting

Sarcoidosis

Reiter's syndrome

Lichen planus



Large, deep and irregular pits are common in psoriasis and eczema, Small, superficial and regular pits are typical of alopecia areata

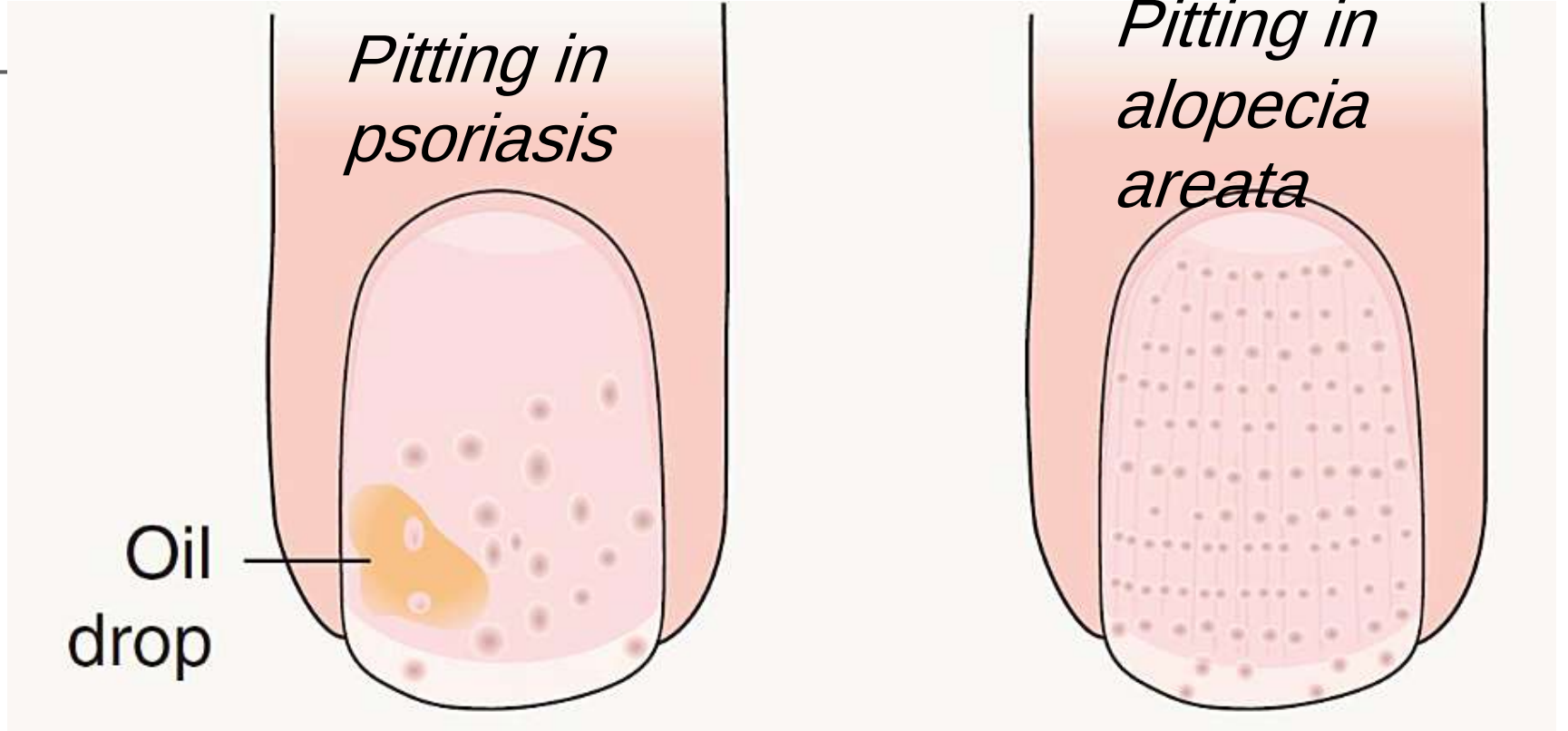
An isolated pit is not diagnostic and may be due to minor trauma



*Pitting in
psoriasis*

Oil
drop

*Pitting in
alopecia
areata*



Onychorrhexis

<https://tangscinical.com/?p=6334>



Onychorrhexis



Onychorrhexis



<https://healthjade.net/onychorrhexis/>

Onychorrhexis due to lichen planus



<https://healthjade.net/onychorrhexis/>

Median canaliform nail dystrophy



© Dr Ph Abimelec - dermatologue

4. Onychorrhexis

Onychorrhexis is characterized by longitudinal ridging and fissuring of the nail plate. The depth of the ridges can vary as can the extent of involvement. Diseases commonly responsible for onychorrhexis include lichen planus, impaired vascular supply, trauma, and tumors that compress the nail matrix.

Table 3.1 Causes of longitudinal lines

Multiple Normal; increase with age after early adulthood (Figures 3.1, 3.3, 3.4)

With all causes of thin nail plates

Lichen planus (Figure 3.5)

Rheumatoid arthritis

Graft-versus-host disease

Psoriasis

Darier's disease

Poor circulation

Collagen vascular diseases

Radiation

Frostbite

Alopecia areata

Nail-patella syndrome

Systemic amyloidosis

Trachyonychia



DermNetNZ.org

Trachyonychia with AA

Chelidze, Khatiya, and Shari R. Lipner. "Nail changes in alopecia areata: an update and review." *International journal of dermatology* 57.7 (2018): 776-783.

Trachyonychia with LP



Dermatology , Edited by Jean L. Bolognia , Julie V. Schaffer , Lorenzo Cerroni Fourth edition

5. Trachyonychia (twenty-nail dystrophy, sandpapered nails)

The term 'twenty-nail dystrophy' or trachyonychia describes a spectrum of nail plate surface abnormalities that result in nail roughness



Patients with trachyonychia can be divided into two main groups:

- 1 Trachyonychia and a past history or clinical evidence of alopecia areata.
 - 2 Isolated nail involvement (idiopathic trachyonychia).
- 

Congenital Leukonychia .



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6. leukonychia

White nails are the most common form of colour change. These can be divided into the following main types:

- 1 True leukonychia, in which the nail plate is involved.
- 2 Apparent leukonychia, with involvement of the subungual tissue. (Nail Signs Due to Nail Bed Disorders)
- 3 Pseudoleukonychia.

Table 7.1 Causes of leukonychia

Congenital and/or hereditary

Isolated

Acrokeratosis verruciformis (Hopf)

Associated with koilonychia (Figure 7.8)

LEOPARD syndrome (lentigines, electrocardiographic changes, ocular hypertelorism, pulmonary stenosis, abnormalities of genitalia, retarded growth, deafness)

Associated with deafness

Leukonychia totalis, multiple sebaceous cysts, renal calculi

Darier's disease—usually linear and longitudinal

Acquired

Pseudoleukonychia

Diffuse form of distal and lateral subungual onychomycosis

Proximal white subungual onychomycosis, especially in AIDS patients

Superficial white onychomycosis

Keratin granulation (superficial friability from nail varnish)

Psoriasis

Apparent leukonychia (Figure 7.9)

Anaemia

Cancer chemotherapeutic agents

Cirrhosis (Terry's sign)

Dyshidrosis

Half-and-half nail (renal diseases) and distal crescent pigmentation

Leprosy

Acquired

Muehrcke's lines of hypoalbuminaemia

True leukonychia

Alkaline metabolic disease

Alopecia areata

Carcinoid tumours of the bronchus

Cardiac insufficiency

Cytotoxic and other drugs (emetine, pilocarpine, sulphonamide, cortisone)

Erythema multiforme

Exfoliative dermatitis

Fasting periods (e.g. in orthodox Jews and Muslims)

Fracture

Gout

Hodgkin's disease

Acquired

Hypocalcaemia

Infectious diseases and infectious fevers

Intra-abdominal malignancies

Kidney transplant

Leprosy

Leuko-onycholysis paradentotica

Menstrual cycle

Myocardial infarction

Occupational

Pellagra

Peripheral neuropathy

Poisoning (antimony, arsenic, fluoride, lead, thallium)

Protein deficiency

Psoriasis

Psychotic episodes (acute)

Renal failure (acute or chronic)

Shock

Sickle cell anaemia

Acquired

Sickle cell anaemia

Surgery

Sympathetic leukonychia

Trauma (single or repeated)

Tumours (benign), cysts pressing on matrix

Ulcerative colitis

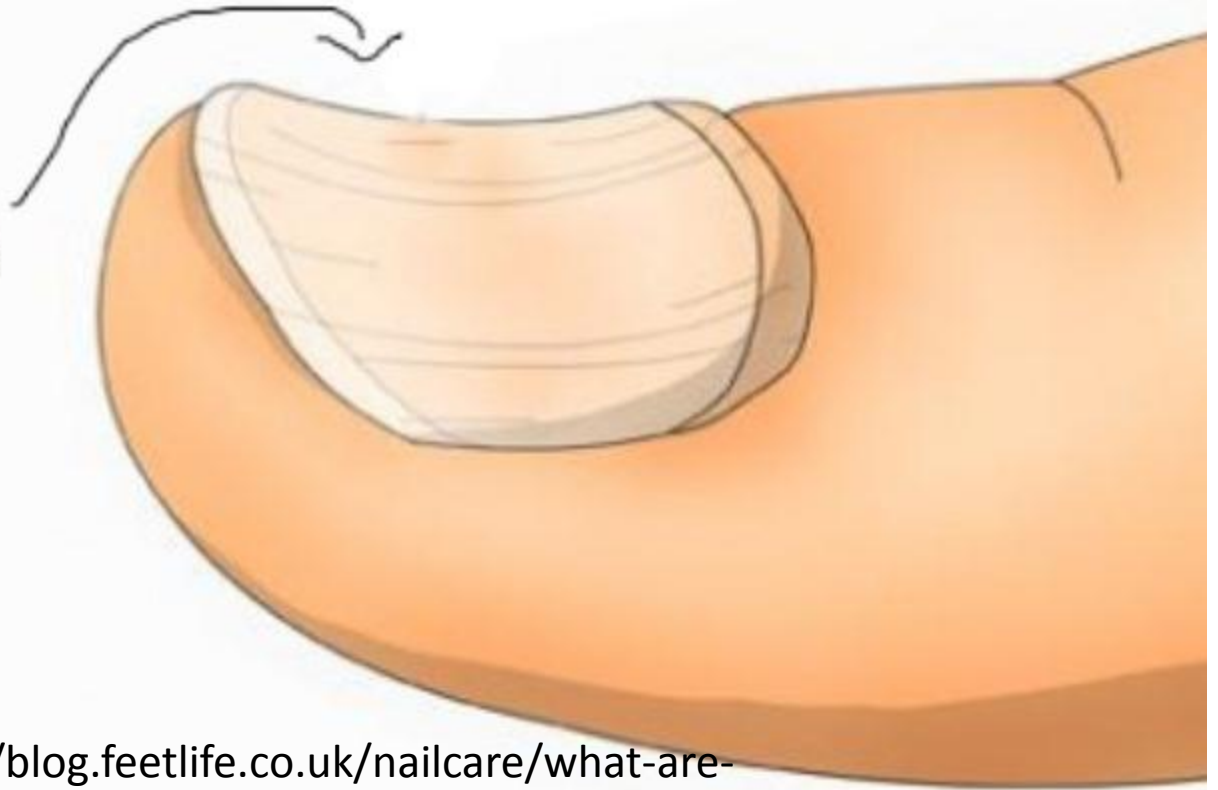
Zinc deficiency



Koilonychia (spoon nails)

<https://www.healthline.com/health/spoon-nails-koilonychia#pictures>

SPOONING



<https://blog.feetlife.co.uk/nailcare/what-are-spoon-shaped-nails/>

7. Koilonychia (spoon nails)

The nail plate is thinned and flattened with upward eversion of its lateral and distal edges, leading to a concave spoon-like shape

Table 2.2 Common causes of koilonychia

Physiological

Early childhood (Figures 2.12–2.13)

Idiopathic

Congenital

LEOPARD syndrome

Ectodermal dysplasias (Figure 2.15)

Trichothiodystrophy

Nail-patella syndrome

Acquired

Metabolic/endocrine

iron deficiency

acromegaly

haemochromatosis

porphyria

renal dialysis/transplant

thyroid disease

Dermatoses

Table 2.2 Common causes of koilonychia

alopecia areata

Darier's disease

lichen planus

psoriasis

Raynaud's disease

Occupational

contact with oils, e.g. engineering industry

Infections

onychomycosis

syphilis

Traumatic

toes of rickshaw pullers

Carpal tunnel syndrome



Nail Signs Due to Nail Bed Disorders



Half-and-half nails

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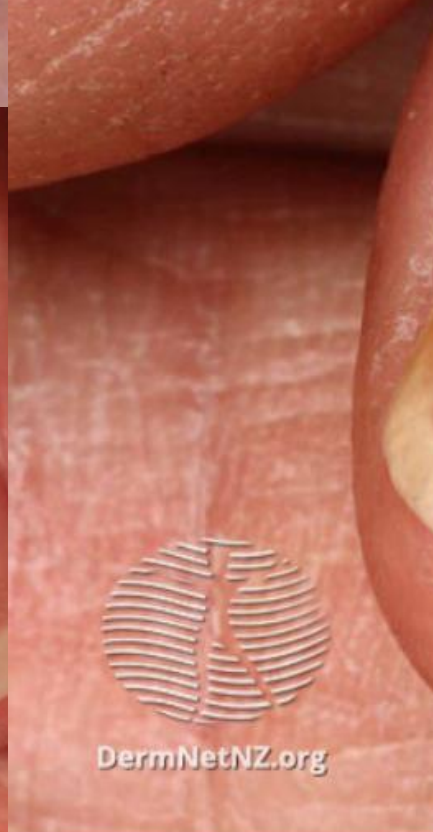


Splinter hemorrhages of the great toe

Splinter haemorrhages seen end on-on

1. Splinter hemorrhages

Splinter hemorrhages appear as one or more red–brown to purple–black, thin longitudinal lines in the distal portion of the nail



Psoriatic nail dystrophy Candida albicans affecting the nails

DermNetNZ.org

2. Onycholysis

The distal nail plate is detached from the nail bed and usually appears white because of the presence of air in the subungual space. If an exogenous pigment is present, the nail may appear yellow (fungi and exudate) to green–black (pyocyanin).



Diseases commonly responsible for onychorrhexis include : lichen planus, impaired vascular supply, trauma, and tumors that compress the nail matrix. The differential diagnosis includes the common phenomenon of age-related ridging of the nail plate.



Table 4.1 Some causes of onycholysis

Idiopathic

Leuko-onycholysis paradentotica (Schuppli syndrome)

Of women (cosmetic use)

Systemic

Circulatory (e.g. lupus erythematosus)

Yellow nail syndrome

Endocrine (e.g. hypothyroidism, thyrotoxicosis)

Pregnancy

Syphilis

Iron deficiency anaemia

Carcinoma of the lung

Pellagra

Table 4.1 Some causes of onycholysis

Congenital and/or hereditary

Partial hereditary onycholysis

Pachyonychia congenita

Cutaneous diseases

Psoriasis, Reiter's disease, vesicular or bullous disease, lichen planus, alopecia areata, multicentric reticulohistiocytosis

Atopic dermatitis, contact dermatitis (accidental or occupational), mycosis fungoides, actinic reticuloid

Hyperhidrosis—tumours of the nail bed

Drugs

Bleomycin, docetaxel, doxorubicin, fluorouracil, retinoids, captopril, paclitaxel, mitozantrone

Drug-induced photo-onycholysis: tryptaflavin, chlorpromazine, chloramphenicol,

Drugs

cephaloridine, icodextrin, clorazepate dipotassium, allopurinol, cloxacillin (exceptional), tetracyclines: especially demethylchlortetracycline and doxycycline, also minocycline, fluoroquinolones, photochemotherapy with psoralens (sunlight or PUVA), thiazide diuretics, flumequine, quinine, oral contraceptives, indomethacin, captopril

Local causes

Trauma (accidental, occupational, self-inflicted (Figure 4.6) or mixed) as with clawing, pinching or stabbing

Foreign bodies

Infection

Fungal

Bacterial

Viral (e.g. warts, herpes simplex, herpes zoster)

Chemical irritants (accidental or occupational)

Prolonged immersion in (hot) water with alkalis and/or detergents, sodium hypochlorite, etc.

Paint removers

Sugar solution

Gasoline and similar solvents

Cosmetics (formaldehyde, false nails, depilatory products, nail polish removers); nickel derived from metal pellets in nail varnish

Physical

Thermal injury (accidental or occupational)

Microwaves



Nail Signs Due to Deposition of Pigment



Deposition of Pigment





Longitudinal brown to black band

Common in darkly pigmented individuals

Single band may be a sign of melanocyte activation or proliferation (nevus, melanoma)

Multiple bands point to physiologic, trauma/onychotillomania, drugs or systemic disease





CONGENITAL AND HEREDITARY NAIL DISEASES





Congenital malalignment of the big toenail

Wagner, G. and Sachse, M.M. (2012), Congenital malalignment of the big toe nail. JDDG: Journal der Deutschen Dermatologischen Gesellschaft, 10: 326-330

Congenital malalignment of the big toenail

Usually bilateral

nail plate of the big toenail deviates laterally from longitudinal axis of the distal phalanx

the nail has a triangular shape, is thick opaque and yellow-brown with multiple Beau's lines



lateral or distal nail embedding is a common complication noticed by the parents only when the nails are severely dystrophic or ingrown





Pachyonychia Congenita

Pachyonychia Congenita

The characteristic finding is a thickened nail with an increased transverse curvature due to severe nail bed hyperkeratosis. Affected nails are extremely hard and difficult to trim.



THE NAIL IN DERMATOLOGIC DISEASES



Psoriasis

irregular pitting, nail bed “oil drops”, and onycholysis with an erythematous border (diagnostic) other abnormalities include splinter hemorrhages, subungual hyperkeratosis, nail plate thickening and crumbling, and paronychia

Treatment

THERAPEUTIC LADDER FOR NAIL PSORIASIS



- Avoid trauma (3)
- Topical vitamin D₃ analogues: calcipotriene (calcipotriol) – nail bed psoriasis (2)
- Topical tazarotene 0.1% gel – nail bed psoriasis (2)
- Topical calcipotriene plus betamethasone dipropionate ointment – nail bed psoriasis (2)
- Intralesional corticosteroid (e.g. 2.5–5 mg/ml triamcinolone acetonide in saline) – nail matrix psoriasis (1)
- Acitretin (0.2–0.3 mg/kg/day) – nail matrix and nail bed psoriasis (1)
- Methotrexate – if indicated for additional manifestations (2)
- Cyclosporine – if indicated for additional manifestations (2)
- Targeted immunomodulators, e.g. TNF- α inhibitors – if indicated for additional manifestations (1)

Lichen planus

, nail thinning, longitudinal ridging and fissuring, and dorsal pterygium (due to scarring). The combination of fissuring plus atrophy can lead to a deformity likened to “angel’s wings”.



Fig. 71.15 Nail lichen planus. Note the nail thinning, atrophy, and dorsal pterygium. The index finger has an "angel's wings" deformity.

Treatment

Treatment with systemic corticosteroids may be required to avoid pterygium formation. Intralesional injections of corticosteroid (2.5–5 mg/ml triamcinolone acetonide in saline) may be utilized when the disease involves a few nails.

Alopecia areata

geometric pitting, trachyonychia, punctate leukonychia, erythema of the lunula, and onychomadesis

Treatment : cluding oral, topical and intralesional corticosteroids, immunosuppressants, cyclosporin, PUVA, and Jak inhibitor



Nail changes, particularly nail pitting, are common in patients with alopecia areata

Eczema

pitting and Beau's lines; onychomadesis, subungual hyperkeratosis, onycholysis, and fissuring of the hyponychium

Controlling the skin disease results in gradual improvement of the nails.

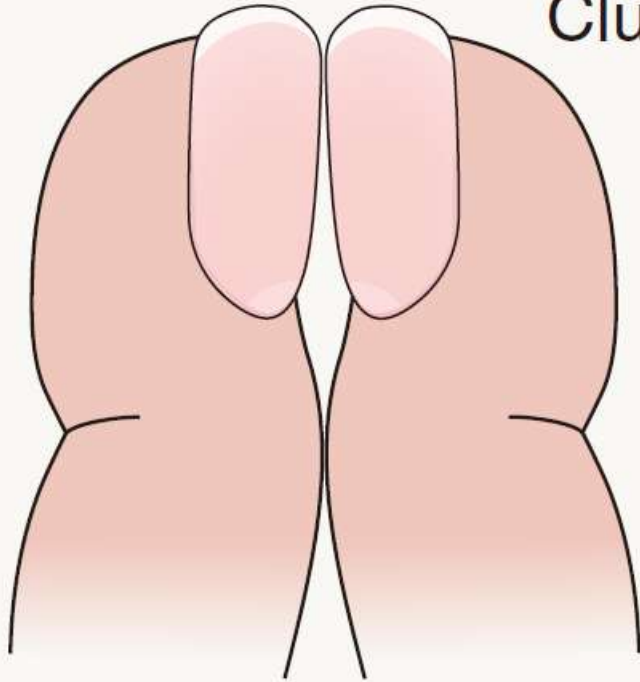


THE NAIL IN SYSTEMIC DISEASES

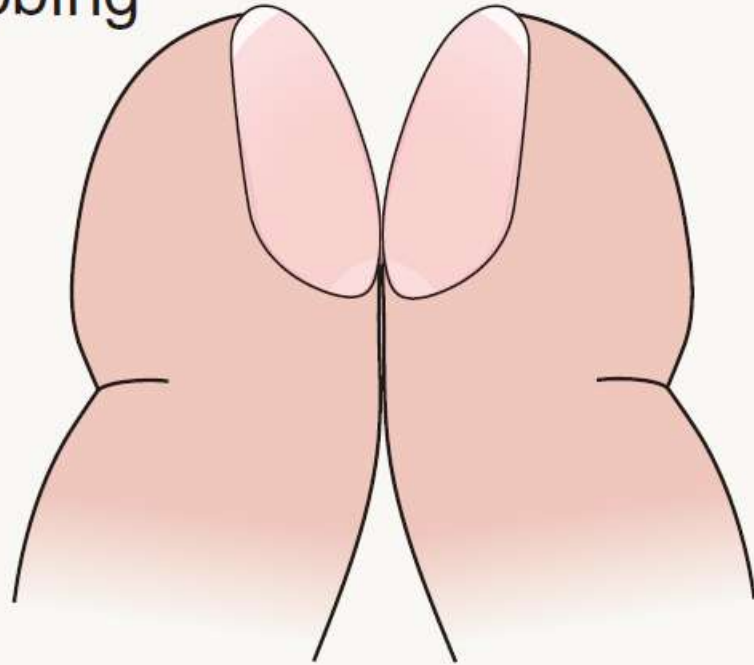




Clubbing



Normal



Clubbing

1. Clubbing (Watch-Glass Nails, Hippocratic Fingers, Drumstick Fingers)

Clubbing is caused by enlargement of the soft tissue of the distal digit, leading to a bulbous appearance. The nail plate is enlarged and excessively curved, with widening of the angle between the proximal nail fold and the nail plate to greater than 180° (Lovibond's sign)

Table 2.1 General causes of clubbing and pseudoclubbing

<i>Clubbing</i>	<i>Pseudoclubbing</i>
Unilateral	Yellow nail syndrome (Figure 2.7)
Aortic/subclavian aneurysm	Gout
Brachial plexus injury	Sarcoidosis
Trauma (Figure 2.5)	Osteoid osteoma
	Perineurioma
	Metastases
Lower extremities	Congenital abnormalities
Arterial graft sepsis	Chronic paronychia—severe hook nail
General	
Congenital	
familial/sporadic	
Thoracic tumours (bronchopulmonary cancers)	
Pulmonary	
Cardiovascular	
Gastrointestinal	
inflammatory bowel disease	
parasitosis	
liver disease	
tropical sprue	
Endocrine/metabolic	
thyroid, acromegaly (Figure 2.6)	
malnutrition	
AIDS	
Secondary to pulmonary and other infections	

2. Yellow Nail Syndrome

Yellow nail syndrome is an uncommon disorder of unknown etiology

Linear nail growth is arrested or greatly reduced. The nails are thickened and transversely and longitudinally overcurved with disappearance of the cuticle. The nail color varies from pale yellow to dark yellow–green



Characteristically, the nail abnormalities are associated with lymphedema and respiratory tract involvement, including chronic bronchitis, bronchiectasis, sinusitis, and pleural effusions.





Fig. 71.16 Yellow nail syndrome. Note the overcurvature of the nail, both transversely and longitudinally, and loss of the cuticle, in addition to the yellow discoloration.

Treatment

Treatment is not effective in all cases and must be prescribed for several months¹⁹:

- vitamin E 1200 IU/day
- pulse itraconazole (200 mg twice daily for 1 week a month)

or

fluconazole (150 mg daily for 1 week a month)



Muehrcke's nails: chemotherapy

Half-and-half nails : chronic renal disease

Terry's nails: liver cirrhosis



Terry's nails





Courtesy of Bianca Maria Piraccini, ESPD annual meeting 2017 nail disorder in
Childerm

Acute paronychia

The affected digit becomes swollen, red, and painful purulent drainage.

Acute paronychia is most commonly due to bacteria, in particular *Staphylococcus aureus* or *Streptococcus pyogenes*

follows minor trauma to the nail

Recurrent episodes of acute paronychia should raise the suspicion of an HSV

Treatment

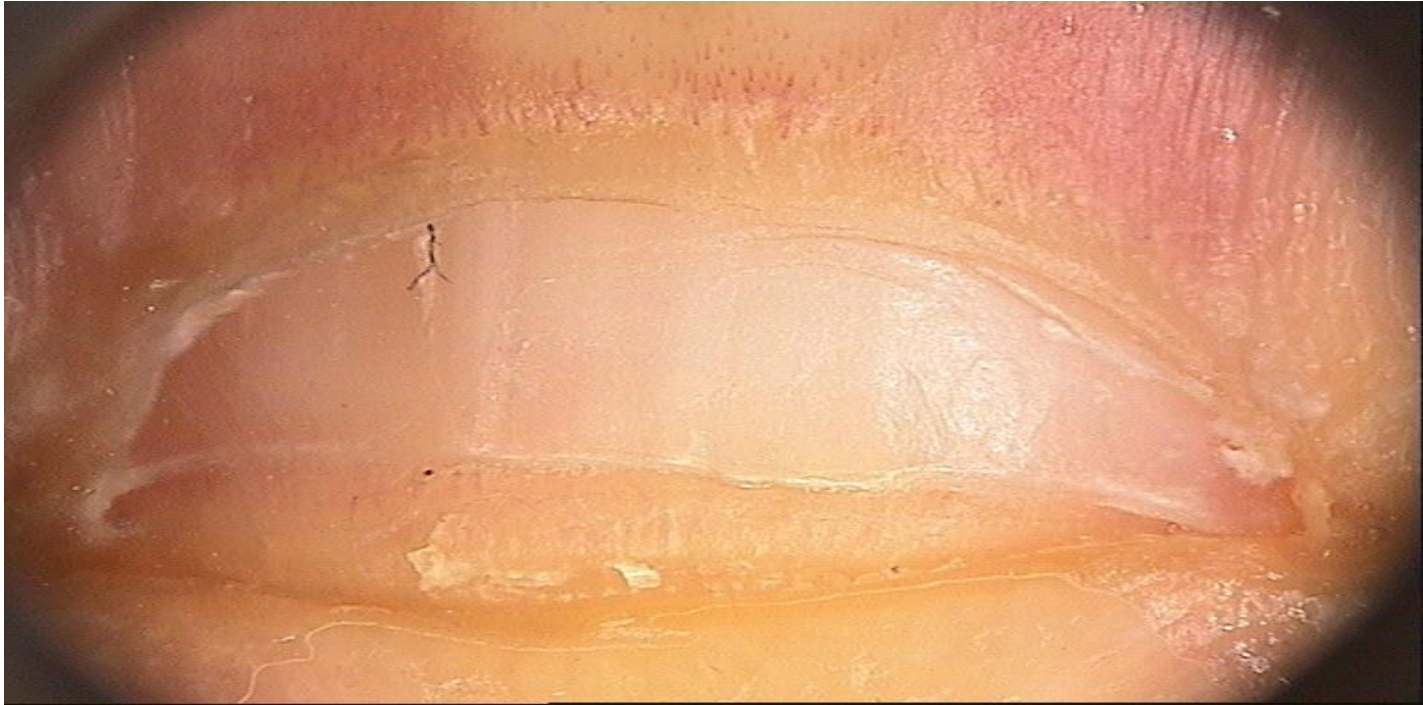
Drainage of the abscess, followed by systemic antibiotics (based upon culture results) or systemic antivirals when due to HSV.

Nail biting

Rare before the of 3 years, peaks in childhood and adolescence

prevalence of about 30% at around 6 year of age occurs as a result of boredom or working on difficult problems rather than anxiety





Shortening of fingernail, with transverse axes longer than longitudinal ones, the hyponychium and nail bed skin become visible

Nail biting

Complications

- change in the oral bacteria (< Enterobacteriaceae)
- dental problems: apical root resorption, alveolar destruction, malocclusions, temporomandibular disorders and gum injuries.
- negative social and psychological consequences for the patients and their parents

Periungual warts are a common complication!



Nail biting

Treatment

- Non-pharmacological therapies

Treatment method	Definition
Punishment	Reprimanding the nail biting behavior with an aim to stop the activity (60)
Habit reversal	Encompasses awareness of the nail biting activity, warning signs, and development of a distracting competing response (62)
Object manipulation	Manipulation of an object during warning signs of nail biting (67)
Bitter tasting lacquer	Aversive therapy used to deter from nail biting due to bad taste of the substance (68)
Non-removable reminder	Wrist-band worn as a non-removable reminder to hinder nail biting (71)



Halteh et al. J Dermatolog Treat. 2017;28: 166-172.

Nail biting

Treatment

- bitter tasting lacquers (containing denatonium benzoate and sucrose octaacetate)
- non-removable reminder technique

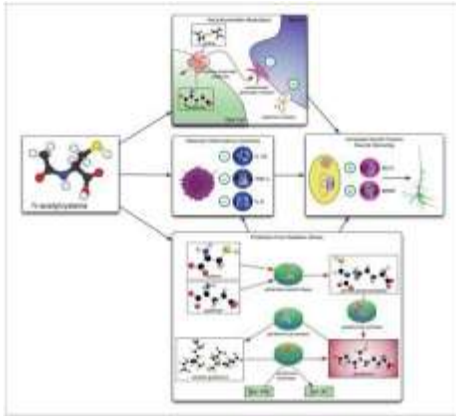


Koritzky & Yechiam. Behav Modif. 2011; 35: .511-30

Nail biting

Treatment

- N-acetyl cysteine (NAC) 800-1200 mg/day



Ghanizadeh et al. Antiinflamm Antiallergy Agents Med Chem. 2013; 12: 223-8.

Deanety al. J Psych Neurosc 2011; 36: 78-.86

Thanks

For more Question feel free to contact me

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